

PX77



MEMORANDUM

To: BSG Operating Committee
Date: March 23, 2019
Re: Telegram – Global leading messaging platform integrated blockchain project

I. EXECUTIVE SUMMARY

Telegram is the world's fastest growing, largest cloud based and fully decentralized instant messaging platform, with over 200 million monthly active users ("MAUs"), growing at c50% annually. It is the world's largest decentralized application ("dApp"), and the dominant and de facto social networking and media platform globally for blockchain and crypto industry.

In January and March 2018, Telegram conducted two rounds of private financing ("Private Sale"), raising a combined \$1.7B, from 175 accredited investors through the sales of its native GRAM tokens, making Telegram the largest fund raising blockchain project of 2018. Amongst the **investors are world renowned venture capital funds such as [REDACTED] and large family offices such as [REDACTED] (Russian oil and aluminum oligarch).** Based on its **last round valuation of \$6.65B, Telegram would be ranked as the 4th largest crypto platform** in terms of total market cap. Telegram is targeting to launch its mainnet in 2Q19, followed by a global exchange listing six months later.

Telegram's team is building a scalable and flexible blockchain architecture that consists of a master chain (TON Blockchain) and a network of accompanying product/service specific workchains (TON Payment, TON Storage, TON Proxy, TON Services, and TON DNS), collectively the Telegram Open Network ("TON"). TON will be built using Byzantine Fault Tolerant ("BFT") Proof-of-Stake ("PoS") consensus algorithm while incorporating sharding (fast and scalable), smart routing (quick cross chain transactions), and 2-D distributed ledger technology (fork resistant), which will be capable of processing millions of transactions per second and host billions of active users. **TON will also be fully integrated with Telegram messenger as the infrastructure rail for products and services including light wallet, secure universal ID, crypto exchange, ad exchange, and digital/physical goods marketplace,** providing TON direct access to Telegram's 200 million plus MAUs, that are largely crypto native.

With **significant network effects driven by Telegram/TON's unique capability of leveraging a utility-centric growth model and positioning as a content-centric two-sided network platform,** it will be able to achieve global deployment of its social network platform supporting messaging, social media, productivity software, financial services and more, across a decentralized ecosystem. Through such broad proliferation, Telegram/TON will be able to bring mainstream adoption of blockchain based applications and cryptocurrency.

Through several months of origination and diligence, BSG has procured a **rare opportunity to invest through a secondary purchase, based on \$0.453 token price at \$2.27B valuation.** This represents a **highly attractive 66% discount to the last round \$1.33 token price at \$6.65B valuation.**

II. INVESTMENT THESIS

TON represents a highly differentiated platform that is aligned with, backed by, and accelerated through Telegram, as the largest decentralized messaging platform built on a fully distributed server



networks, with more than 200 million users (all from organic growth). It is well capitalized through its landmark \$1.7B fund raise, invested across global leading investor groups and strategic institutions. **It stands to take industry leadership in bringing significant growth in the global blockchain ecosystem and mainstream adoption of cryptocurrency, in turn, evolving into a “super decentralized application ecosystem” serving diversified and differentiated needs of users globally.**

Game changing dApp distribution platform

We believe blockchain technology and its applications have tremendous market potential. As Gartner predicted, by 2022, more than 1 billion people will have certain personal data stored on a blockchain, and by 2025, the total business value created by blockchain innovation will increase to \$176B and then surge to \$3T by 2030, based on 76% CAGR. However, growth in blockchain ecosystem has reached a critical juncture, whereas the value of blockchain enabled digital assets/cryptocurrency thus far has been dominated by Bitcoin, but mainstream adoption by enterprises and consumers will need to happen through the proliferation of decentralized applications.

As of today, the most popular dApps built on Ethereum and EOS only have c10,000 average DAUs, clearly depicting a fundamental issue of the lack of mainstream user market adoption of blockchain based projects. On the other hand, Telegram, being the world’s largest decentralized application, is uniquely positioned on the high frequency communication infrastructure rail, and it also has immediate and extensive resources to drive the development and mainstream adoption of dApps across its users ecosystem.

With its core function as an instant messenger, **Telegram owns the infrastructure rail that captures one of the most foundational human demands, communication, which represents the highest frequency of touchpoints and deep functional engagements.** This communication infrastructure rail is highly efficient and impactful as the backbone for dApp distribution channel/network across mass audiences.

Furthermore, Telegram has the largest blockchain/crypto native user and developer base. As the de facto instant messenger for blockchain/crypto (as of late 2017 more than 84% of upcoming blockchain based projects have active Telegram communities), significant portion of the 200 million Telegram user base has exposure or existing knowledge to blockchain and cryptocurrency. On the content ecosystem side, Telegram has the largest developer ecosystem amongst messenger platforms with more than 800,000 developer service bots operating within the Telegram Messenger (as of late 2017), compared to WhatsApp, Facebook Messenger (c300,00) and LINE (c240,000)

Fully integrated with Telegram, **TON present the combination of having one of the largest developer ecosystem, with distribution network across 200 million crypto native user base, in order to efficiently and effectively build out an Apple App Store-like integrated portal for millions of users to access products, services, and contents offered by TON as its “killer dApp”.**

Utility-centric growth engine super charged by content specific network effects

Establishing itself as the premier integrated portal for dApp distribution, **Telegram/TON has rapidly scaled through its messaging based “utility centric” growth engine, and further levered by high impact network effects as part of its content-centric two-sided network platform.** Telegram was initially created as a “private channel” communication network for blockchain and crypto specific users seeking a fast and secure communication rail. As the user base expanded, growth further accelerated driven by user consumption of media and network contents, with the introduction of influencers, brands, advertisers, and other digital content, establishing a two sided network with Telegram as the exchange platform connecting messaging users and content providers. Growth on



one side of the network prompted further growth on the other side, and vice versa, creating a positive feedback loop that resulting in significant scaling.

By adding bots to its platform, Telegram further expanded its content provider base, but the services offered were limited to chatbots engaging in customer service, news aggregation, and payments. **The introduction of TON will bring the ecosystem to its next level, by expanding service providers/developers across a variety of verticals including financial services, productivity software, gaming, ecommerce, and more, significantly broadening the utility case of Telegram.**

As TON continue to develop, significant positive network effects will attract and drive more users and developers to the platform, while the ecosystem utilities and contents further expands. Platform growth will be further accelerated by economic value enhancements including 1) lower user acquisition cost, driven by organic network sharing of dApps among users, as well as 2) cost disintermediation for both users (dApps tokenomics) and developers (removal of centralized platform fees, e.g. iOS 30% payment fee). **This combination of a dynamic utility/content-centric two-sided network and technoeconomic innovations will support and further drive Telegram/TON's dominance as the leading decentralized app ecosystem.**

Killer applications designed to target pent-up user demands

Payment and GRAMs

In the immediate term, TON Light Wallet will be the first killer app feature delivered through TON/Telegram. TON's Light Wallet will be made available as an in-app feature integrated into Telegram across its user base, significantly increasing the estimated 30 million active crypto wallets globally. Supported by 10% Grams (equivalent to more than \$665M at \$1.33 per token) allocated for ecosystem developments, including rewarding users for wallet activation, KYC and AML processing, etc., **TON Light Wallet and Grams has the potential to become the most widely used wallet and held cryptocurrency in the world.**

Telegram's storefront bots already serve over 52 million users and accept credit payments across the globe. TON Light Wallet will allow users to seamlessly convert between fiat and crypto, lowering the barrier for mainstream adoption. Grams will become an attractive payment alternative, with significantly lower transaction costs for purchases and international remittance, driving further adoption and usage throughout the TON/Telegram's ecosystem.

Secured ID

Telegram/TON will offer a secured ID system to store KYC-AML information, which will also be used as a virtual passport to log into dApp services requiring user verification and registration across the ecosystem, streamlining and simplifying the onboarding process for user engaging in platform utilities and digital assets.

All private data (such as passport scans) will be stored via end-to-end encryption and only accessible by the owners. Telegram's distributed servers (and later the TON Blockchain) will have no access to private user data, but will instead store a hashed value to confirm data verification through user secure ID. Third parties will be able to add further verifications to these virtual passports.

An industry best team with leadership in decentralized technology and proven track record

TON is led by Pavel Durov, Dr. Nikolai Durov, and a team over more than 30 of global top software engineers and cryptographers, **regarded as among the best globally, in blockchain and technological innovations, with proven experience in building and scaling secured application for millions of users.** It is rare to have a core team of this size in top software development talents, many of which had previous working relationships together building an industry leading platform (VKontakte, with c100M users), and led by driven and inspirational leadership.



Valuation

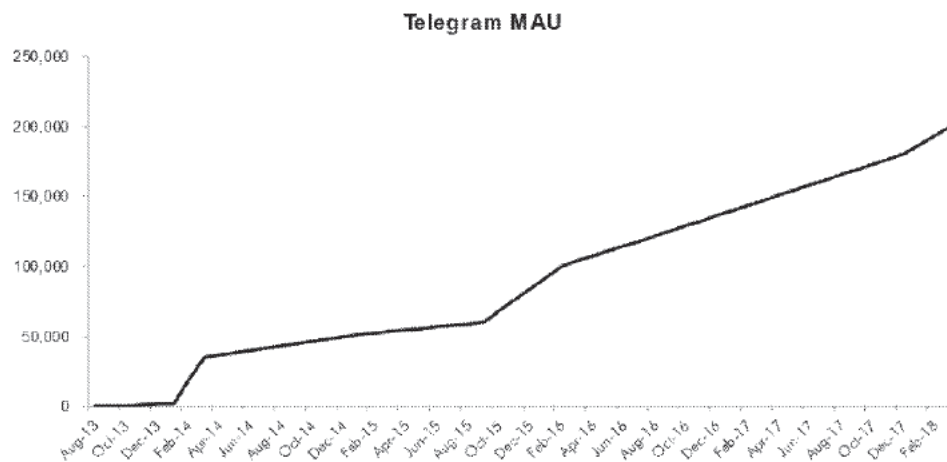
At \$2.26B, we believe BSG's valuation for investment in Telegram is highly attractive, compared to its competitors (please see Transaction Overview for details), with significant upsides from TON's integration and development. BSG is investing at only 20% premium compared to round one valuation and 66% discount to round two valuation, which is very favorable taking into account more than a whole year of system/product development, active user base growth, and reduction to commercialization risk. **Assuming the upcoming ICO will be priced at a higher price to the second round token price of \$1.33, BSG's deeply discounted purchase price of \$0.453, combined with the potential to distribute investment cost within 6 months while retaining significant upsides at-work, represent a rare special situation opportunity, and reflects BSG's strategic value and relationship with the seller.**

III. TELEGRAM AND TON OVERVIEW

Telegram overview

Telegram was first launched on Aug 14th, 2013 as a cloud-based, mobile-first instant messaging application (later introduced voice over IP and video calling features) developed by Russian entrepreneur Pavel Durov and his brother Dr. Nikolai Durov (founders of VK, the Facebook of Russia). By March 2018, Telegram's MAUs reached 200 million and grew at a pace of 500,000 users per day; total messages sent across the network reached 8.7 billion on a daily basis (adjusted in accordance to the ratio of Telegram users to WhatsApp users), ranking it as the world's eighth most popular instant messenger.

Exhibit 1: Telegram historical MAU trend



Initial growth stage

Before founding Telegram, Pavel Durov and Dr. Nikolai Durov were founders of VKontakte ("VK"), the most popular social media platform amongst Russian speaking population. As the company grew, the pair faced continued pressure from the Russian government to handover user information on the grounds of national security, in which Pavel refused publicly. Pavel and Nikolai were eventually forced to sell their shares in VK and dismissed from their executive posts. These run-ins with the government prompted the pair to develop an instant messaging service incorporating end-to-end encryption to ensure the preservation of user privacy.

In June 2013, Edward Snowden unveiled the fact that hardware and software conglomerates have been cooperating with the U.S government in passing sensitive information on their consumers. The



notion of privacy infringement gave rise to strong public demand for a communication product that protects user's private data. Two months later, Telegram was officially released on iOS and positioned itself as the most secure instant messenger with proprietary end-to-end encryption protocol MTProto developed by Dr. Nikolai Durov. Furthermore, Pavel's libertarian persona demonstrated by his fight to protect user privacy against the Russian government gave Telegram an even more appeal to perspective users. Telegram's user base quickly grew to 200,000 in two months and was growing at a rate of 300,000-400,000 downloads per day right before the announcement of WhatsApp being acquired by Facebook on February 19, 2014.

After Facebook announced its acquisition of WhatsApp, Telegram's per day growth tripled to about 1 million new downloads and continued rising. By March 2014, Telegram's user base grew to 35 million and became the most popular messenger app on Apple's App store.

Public media content consumption

As the network expanded significantly, media content providers such as influencers, brands, advertisers, and other digital content providers came onto the platform to access Telegram's fast growing user base. In an effort to facilitate the effective distribution and consumption of media contents created by these content providers, Telegram created groups and channels functions to allow content providers to reach a large audience with up to date information. Telegram's public broadcast channels currently generate 30 billion views from 80 million users per month.

Cryptocurrency adoption

Due to Pavel and Nikolai's image of being libertarians, its open ecosystem to developers, and the wide range of services offered by Telegram such as bots, channels, and groups hosting up to 100,000 people; Telegram became the preferred messenger for cryptocurrency. As reported by Tokenmarket, as of late 2017, 84% of upcoming blockchain-based projects had an active Telegram community, more than all other major chat applications combined. By Q1 2018, Telegram's MAU surpassed 200 million.

Telegram's Product Offerings

Telegram puts significant emphasis on the quality of its product offerings, and has rolled out software updates and new features on a monthly basis. Besides its world-class proprietary security protocol, Telegram's compression tech also enables faster send time and smoother audio experience compared to other messengers. Telegram main featured products and services include:

Secret Chat: When initiated, messages are encrypted with the MTProto protocol and can only be accessed on the device upon which the secret chat was initiated and accepted. Messages sent within secret chats can be deleted at any time and can optionally self-destruct.

Multi-device Access: Telegram's default messages are cloud-based, which can be accessed through different devices. A web version, a desktop version and a mobile version are currently offered; compatible with all major operating systems including iOS, Android, Windows Phone, Windows, macOS and Linux.

File Sending: Telegram was one of the first to support sending files of all formats with no size limit.

Voice Calls: Telegram's voice calls are built upon the end-to-end encryption of Secret Chats. It utilizes peer-to-peer connection whenever possible, otherwise the closest server to the user is used. Telegram utilizes a neural network analyzing various technical parameters of existing network channels in order to select the fastest connection.



Other services include channels (broadcasting channel for news/content), groups (can host up to 100,000 people), live locations (location sharing), Telescope (video messages), social logins (use Telegram accounts for other website logins), and Passport (KYC credentials).

Telegram's infrastructure and current developer's toolkit include:

Distributed Physical Infrastructure: Telegram deploys a distributed server infrastructure to synchronize encrypted data across multiple independent server clusters spread across different continents and jurisdictions.

Open Source: Telegram's client end is open source, allowing third party developers and companies to develop their own versions of the client app using Telegram's underlying infrastructure.

Open APIs: Telegram also allows developers to access the same functionality as Telegram's official app to build their own messaging applications. In September 2015, Samsung built its own messaging application based on Telegram APIs.

Bot Platform: Telegram is one of the first messengers to allow third party developers to create bots (June 2015, 3 years earlier than WhatsApp). Telegram bots can read and respond to messages, accept payments from credit cards and Apple Pay, respond to information queries, curate media contents and manage group chats. As of October 2017, more than 800,000 unique third-party bots are used by 52 million Telegram users. These bots can already accept credit card payments from users in 200 countries via eight providers connected to the Telegram Payments Platform.

TON Overview

TON will be built as a scalable and flexible blockchain architecture that consists of a master chain and a number of accompanying "workchains". It aims to create 1) speed and scalability that allows for processing millions of transactions per second and potentially accommodating billions of active users, 2) intuitive user interfaces that enable an average user to easily buy, store, and transfer value, as well as use decentralized apps in a natural way, and 3) an engaged user base that drives demand for services in the ecosystem and provides pre-existing critical mass for future growth.

TON Core Technology

Infinite Sharding Paradigm: TON will have built-in support for sharding: TON blockchains can automatically split and merge to accommodate changes in load, allowing new blocks to be generated quickly at low transaction costs even during times of high traffic.

Instant Hypercube Routing: TON blockchains will use smart routing mechanisms to ensure that transactions between any two blockchains will be processed swiftly, regardless of the size of the system. The time needed to pass information between TON blockchains grows logarithmically with their number, so scaling to even millions of chains should allow them all to communicate at top speed.

Proof-of-Stake Approach: TON will use a Proof-of-Stake approach in which processing nodes ("validators") deposit stakes to guarantee their dependability and reach consensus through a variant of the Byzantine Fault Tolerant protocol. This allows TON to focus the computing power of its nodes on handling transactions and smart contracts, further increasing speed and efficiency.

2-D Distributed Ledgers: TON will be able to "grow" new valid blocks on top of any blocks that were proven to be incorrect to avoid unnecessary forks. This self-healing mechanism saves resources and helps ensure that valid transactions will not be discarded due to unrelated errors.



Product/Service Specific Workchains

As a multi-blockchain project, TON requires sophisticated network protocols — such as the TON P2P Network used to access the TON blockchains — that can be reused to give a boost in flexibility to the platform. The following components are scheduled to be released after the TON Blockchain core and will further increase the potential uses of the TON infrastructure.

Ton Storage: TON Storage is a distributed file-storage technology, accessible through the TON P2P Network and available for storing arbitrary files, with torrent-like access technology and smart contracts used to enforce availability. This component not only enables storage services akin to a distributed Dropbox, but also paves the way for more complex decentralized apps that require storing large amounts of data, such as YouTube — or Telegram.

TON Proxy: TON Proxy is a network proxy/anonymizer layer used to hide the identity and IP addresses of TON nodes. Similar to I2P (Invisible Internet Project), this layer can be used to create decentralized VPN services and blockchain-based TOR alternatives to achieve anonymity and protect online privacy. In conjunction with the TON P2P Network and TON DNS, TON Proxy could make any service, including Telegram, effectively immune to censorship.

TON Services: TON Services provides a platform for third-party services of any kind that enables smartphone-like friendly interfaces for decentralized apps and smart contracts, as well as a World Wide Web-like decentralized browsing experience.

TON DNS: TON DNS is a service for assigning human-readable names to accounts, smart contracts, services, and network nodes. With TON DNS, accessing decentralized services can be similar to viewing a website on the World Wide Web.

TON Payment: TON Payments is a platform for micropayments and a micropayment channel network. It can be used for instant off-chain value transfers between users, bots, and other services. Safeguards built into the system are meant to ensure that these transfers are as secure as onchain transactions.

Besides Telegram, these chain based services can also connect to any other apps and/or services, providing a truly global and diverse ecosystem.

Telegram – TON Integration

TON Light Wallet

TON light wallets will be built into Telegram applications, allowing millions of users to store their funds securely in the TON blockchain, which could become the world's most adopted cryptocurrency wallet. Telegram mobile and desktop applications with integrated wallets will also double as TON clients, enabling secure transfers of value within the TON blockchain and interaction with TON smart contracts and applications. Telegram will offer streamlined interfaces for sending value to contacts and paying for purchases within the TON ecosystem.

External Secured IDs

Telegram will offer a secured ID system to store KYC-AML information, which can be used as a virtual passport to log into services that require user verification, streamlining and simplifying the onboarding process, thereby eliminating a major point of friction for anyone engaging with crypto-assets.

All private data (such as passport scans) will be stored end-to-end encrypted with a key known only to the owners. Telegram's distributed servers (and later the TON Blockchain) will have no access to this information, but will instead store a hash of the value to be able to confirm that the data was



verified when the user obtained their secure ID. Third parties will be able to add further verifications to these virtual passports.

Other Services Utilizing Existing Ecosystem Resources

1. Bot Platform as Fiat On-ramp for Cryptocurrency. External Secured IDs in conjunction with bots that can accept credit cards, will allow users to be able to buy and exchange cryptocurrencies in a frictionless and legally compliant way.
2. Ads Exchange for Groups and Channels. Telegram will launch a TON-based ad exchange where parties interested in promoting their projects' products/services can connect with the relevant channel owners and negotiate a price in a transparent and fully automated way. All accompanying transactions will be made in Grams on a per-view or per-click basis, with the necessary statistics and guarantees provided to all parties.
3. Ecommerce for Digital Content and Physical Goods. Bots, channels, and groups provide a ready market for paid content and subscription services. Users will be able to support publishers and content creators by making donations or paying for exclusive access. Bots can act as virtual storefronts and accept orders for the delivery of physical goods. Telegram's in-app economy will supply the TON market with a wide range of goods and services that can be obtained with Gram.
4. A Gateway to Decentralized Services. Telegram will offer a searchable registry of decentralized services from its applications, providing a list of the most popular apps, as well as recommendations based on the user's history of choices.

Gram Token Usage

In addition to payments for all digital and physical assets sold by individual merchants within the Telegram ecosystem and on other projects integrated with TON, Grams will be used as:

- Gas paid to TON validator nodes for processing transactions and smart contracts
- Stakes deposited by validators to be eligible to validate transactions and generate new blocks and tokens
- Capital lent out to validators in exchange for a share of their reward
- Voting power required to support or oppose changes in the parameters of the protocol
- Payment for services provided by apps built on the platform (TON Services)
- Payment for storing data securely in a decentralized way (TON Storage)
- Payment for registering blockchain-based domain names (TON DNS) and hosting TON-sites (TON WWW)
- Payment for hiding identity and IP addresses (TON Proxy)
- Payment for bypassing censorship imposed by local ISPs (TON Proxy)

TON Development Progress

In a report released on Jan. 28th, 2019, Telegram reported that the testnet for TON Blockchain is 90% complete, please see detailed updates in Appendix A.

IV. TEAM

Unlike many other blockchain related projects, TON's team is one of the most established with a proven track-record in building scalable platforms and applications (VK and Telegram) capable of serving hundreds of millions of active users.

Pavel Durov, CEO, is a serial entrepreneur and the founder of VK, which under his leadership commanded a 70 percent market share in Russia, Ukraine and Belorussia, eclipsing Facebook and other competing social networks. Pavel was forced to sell VK and leave Russia in 2014 after a clash



with the government over his users' privacy and freedom of speech. Proceed from the sale was about \$300million.

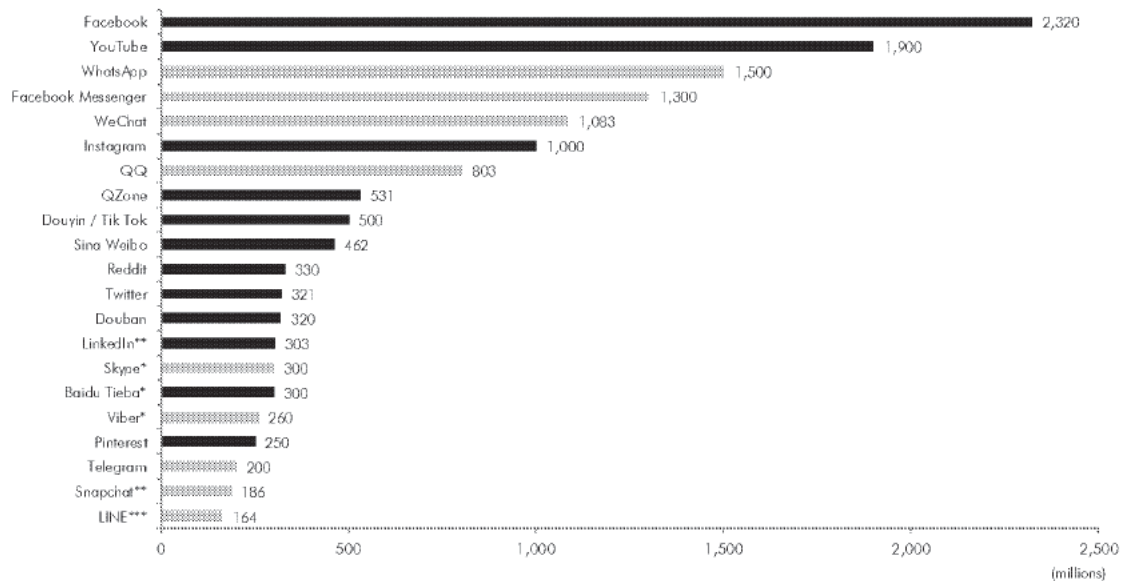
Dr. Nikolai Durov, CTO and Chief Architect, is an internationally renowned programmer, mathematician, and the technical brain behind VK's and Telegram's distributed system capable of serving millions of daily active users. Nikolai is one of ten people that won the ACM International Collegiate Program Contest twice (2000 and 2001). He also holds three gold-medals in International Mathematical Olympiads (1996, 1997, and 1998), and four gold and silver-medals in International Olympiad in Informatics (1995, 1996, 1997, and 1998).

In addition to the founders, the core team consists of 11 developers that have a combined international accolades of 10 gold/silver medals in Mathematics & Informatics, and 6 international programming champions.

V. INDUSTRY OVERVIEW

The first recognizable social media website, SixDegrees.com, was launched in 1997; and at its peak, three million people used its services. Twenty-one years later, social platforms such as social media and instant messengers are now connecting 3.484 billion people on a monthly basis, representing 45.0% of the global population. The industry's user base grew at a CAGR of 39.9% (1997-2018). Below is a ranking of social platforms in terms of MAU.

Exhibit 2: Social platforms ranking in terms of MAU (millions)



*has not published user data longer than 12 months

**does not publish MAU data, Snapchat data is DAU

***only included four major countries in their earnings report

Social platforms are in nature “two sided network platforms”. A two sided network platform is an intermediary platform connecting two distinct user groups that provide each other with cross network benefits; growth from one side of the network prompting growth from the other side, and vice versa. Content, whether it is “engaging media content” or “utility centric service content”, is the key driver for growth in within two sided network platforms.

Social media platform grew through engaging media content

As reported by Statista, in 2018, there are over 2.62 billion people using social media platforms (6.5% growth YoY) with a penetration rate of 71.8% amongst internet users.

Exhibit 3: Global Social Media Users

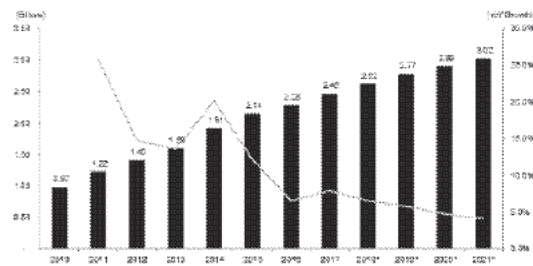
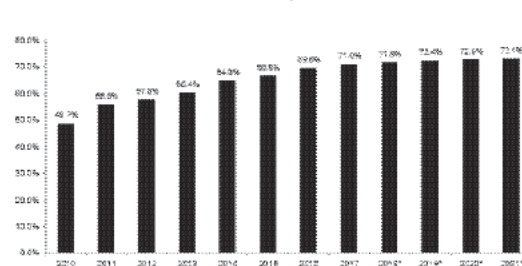


Exhibit 4: Penetration as % of Internet Users



Initially, for social media platforms like Facebook, the focus was “connecting people” in order to create a “social graph”, which maps out the interwoven connections between groups of people. The social graph was used to help people find connections with others and/or to see what their friends were doing on the site. The concept of the social graph quickly gained popularity as it resonated directly with people’s social needs in forming relationships with others. As the number of connections grew, the number of friends displayed prominently on a person profile page, became a measure of the person’s popularity and social status, prompting people to add more and more connections to their network, resulting in Facebook growing to 10 million users in 2005.

In 2006, Facebook launched Timeline, its own version of the news feed, a never ending stream of aggregated content personalized for user consumption; which allowed advertisers to seamlessly insert content into the feed. The news feed signified the beginning of the social web focusing on media/content instead of networking; also a shift from serving social needs of people to monetizing their attention.

Then in September, 2009, the “like” button became available on Facebook. “Like” not only lowered the bar of social interaction, prompting prolific use, but also aggregated invisible user reactions to contents into analyzable data. The data produced by the “like” button was mapped across different users’ social graphs and used to feed algorithms that decided what would be shown in their news feeds.

Engaging media content became the fuel to expand the social graph, to measure user engagement and to monetize users’ data. As demonstrated below, social media platforms are now a place for people to find news, to find entertainment, with less focus on keeping up with friends.

Exhibit 5: Global social media usage reasons

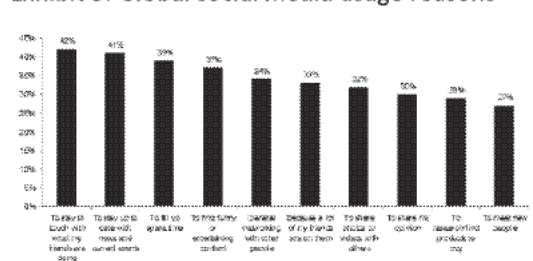


Exhibit 6: Global social media usage by age group

	Gen Z	Millennials	Gen X	Baby Boomers
To fill up spare time	43%	43%	13%	27%
To find funny or entertaining content	46%	42%	30%	0%
To stay in touch with what my friends are doing	42%	43%	39%	40%
To stay up-to-date with news and current events	39%	43%	30%	30%
To share photos or videos with others	36%	0%	0%	0%
General networking with other people	0%	36%	39%	27%
Because a lot of my friends are on them	0%	0%	0%	27%

Instant messaging platforms grew through utility centric service content

As reported by Statista, in 2018, there are 2.01 billion people using mobile instant messengers (10.4% growth YoY), with a penetration rate of 66.4%.

Exhibit 7: Global mobile instant messenger users

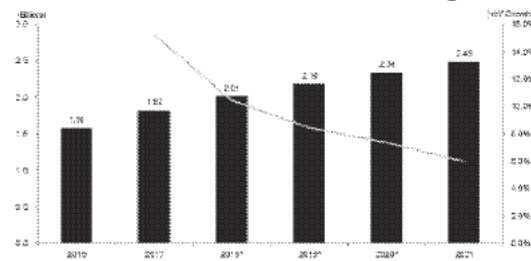
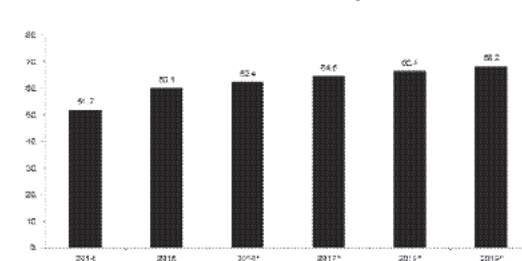


Exhibit 8: Mobile internet user penetration %



The initial user on-ramp for instant messaging was cost effectiveness as it is a cheap alternative to existing solutions such as SMS. Albeit a slower initial adoption than its social media counterparts, instant messenger as a communication infrastructure rail flourished as the digital migration of communication needs continued; further supported by significantly lower data cost offered through the proliferation of 3G and later 4G technology.

Instant messengers today offer a full suite of communication services such as sharing of photos, videos and files; voice and video calls. These services greatly improved the efficiency and effectiveness of communication, translating to significant productivity gains, in turn driving an exponential growth in user adoption.

Therefore, instead of focusing on growth through engaging media content, instant messengers are focused on growth through “utility centric service content”, for which a variety of services can be included to expand their utility case. WeChat is a good example, which has a wide range of services that people can connect to by just using a single app, payment, ecommerce, food delivery, utilities payment, phone bill payments, are only some examples.

Instant messaging platforms likely to experience higher growth

Both social media and instant messaging platforms are experiencing slower user growth as penetration rates reach a plateau, especially in developed regions of the world with high smart phone penetration; prompting social platforms to look to developing regions such as Southern Asian countries like India, where 1) the economy is relatively stable with significant capital investment in telecommunication infrastructure; 2) a large concentrated growing population with favorable age demographics; and 3) culturally susceptible to foreign products and media content. Although Central Asia and most of Africa also lag in terms of social media penetration, but they are unable to deploy sufficient capital for connectivity infrastructure, rendering these regions less appealing.

Exhibit 9: Regional social platforms penetration rates



	Social Platform Penetration	Internet Penetration	Social Platform Penetration amongst Internet Users
Americas			
Northern America	70%	85%	74%
Central America	62%	63%	98%
Caribbean	46%	51%	90%
Southern America	86%	73%	90%
Europe			
Northern Europe	67%	85%	71%
Western Europe	53%	84%	56%
Southern Europe	58%	88%	66%
Eastern Europe	49%	80%	60%
Africa			
Northern Africa	40%	50%	80%
Western Africa	12%	41%	29%
Middle Africa	7%	12%	59%
Eastern Africa	8%	32%	25%
Southern Africa	38%	51%	75%
Asia			
Western Asia	54%	66%	82%
Central Asia	18%	50%	32%
Southern Asia	24%	42%	57%
Eastern Asia	70%	60%	117%
South-Eastern Asia	61%	63%	97%
Oceania	57%	69%	83%
Global Average	45%	62%	71%

However, we believe instant messaging platforms will have a better growth profile, not only due to its lower penetration, but also its ability to horizontally expand service offerings, as evidenced by the differing revenue composition between social media platforms and instant messenger platforms. For social media platforms, such as Facebook, Twitter, and Snapchat, advertising revenue accounts for close to 90% of their total revenue. Whereas their Asian counterparts, mostly instant messenger platforms like Wechat, Line, and Kakao, have built a more diversified revenue stream including financial services, gaming, live streaming, content marketplace, etc.

Furthermore, blockchain technology will likely accelerate the growth of instant messengers by providing comprehensive economic models to incentivize and facilitate the development of a healthy ecosystem with third party developers, which is essential in realizing instant messengers' potential of becoming the portal to all utility-based services and contents.

VI. COMPETITIVE ANALYSIS

After Telegram/TON's successful ICO back in March, 2018, many of its competitors in the instant messaging space have also launched their own efforts in blockchain technology and cryptocurrency, including LINE, Kakao, and potentially WhatsApp.

LINE/LINK

LINE Corporation ("LINE"), based in Japan and one of the largest instant messenger platforms in Asia with more than 164 million MAUs in its four major markets including, Japan (79mn), Taiwan (21mn), Thailand (44mn) and Indonesia (20mn), announced its plan to launch its own blockchain mainnet during its developers conference in April 2018.

In August 2018, LINE launched the first version of its mainnet, LINK Chain, which is a service-oriented blockchain network enabling dApps built by LINE and third party developers, to be directly incorporated to LINE's messaging platform. LINK, LINK Chain's native token, will be used as a reward and payment token for services and products within LINK Chain's ecosystem of dApps. LINK is currently listed exclusively on LINE's cryptocurrency exchange platform Bitbox, based in Singapore, with a price of 0.00081601 BTC (~\$3.28, \$3.28B total market cap) as of March 17, 2019.

Currently, LINK can only be used to pay for transaction fees on Bitbox. The discount offered is that if LINK's price is below \$5, the \$5 price will be used in calculating transaction fees paid in LINK. Although LINE launched two dApps called 4cast (an Augur like forecast dApp) and Wizball (Q&A based expert network), LINK cannot be used within the dApps due to Japan's pending regulatory



approvals. However, once obtaining regulatory approval, incorporating LINK into LINE Pay's 1.3 million locations (mainly in Japan), will be a significant upside for the project.

Instead of raising funds through an ICO, LINE elected to allocate 80% (800 million LINK) of LINK's total supply of 1 billion as a reward pool for dApp users, with the remaining 20% (200 million LINK) controlled by LINE.

Through BSG's internal network contacts and market research, we believe although LINE is on the right track of developing its own blockchain and cryptocurrency capabilities, but it poses a limited competitive threat to Telegram/TON in its current state, due to 1) users mostly based in Asia and showing signs of user decline outside of its home country Japan; Indonesia's MAU declined by 12 million in 2018; 2) significant regulatory hurdles in Japan, limiting LINE's ability to roll-out LINK to its largest user base; and 3) limited third party developer ecosystem: LINE has not released technical details on LINK Chain and plans to open the network to third party developers are unclear; only two dApps are launched with both of them being developed by LINE.

Kakao/Klaytn

Kakao Corporation ("Kakao"), South Korea's largest instant messenger platform with more than 43.8 million MAUs in Korea and 50.2 million globally, established a wholly owned subsidiary Ground X, to develop its blockchain ecosystem in March 2018. In October 2018, Ground X announced fundraising plans for the development of its blockchain mainnet, Klaytn. Klaytn will be a service-centric public blockchain platform aiming to create a user friendly ecosystem for end-users, developers and enterprises. The initial supply of its native token, Klay, will be 10 billion with additional tokens issued each year for block rewards.

Klaytn has partnered with 26 service providers to launch their dApps once the Klaytn mainnet is launched, expected in June 2019; services offered include music, gaming, travel services, sports, crowdfunding, and financial services.

In March 2019, Ground X announced that it had closed a private fundraise of over \$90mn from strategic partners and venture capital firms including [REDACTED], [REDACTED] and [REDACTED]. The second private round will begin immediately and the target fundraise amount is \$90mn.

Kakao's clear dominance in Korea, over 96% market share of the instant messaging market and a wide range of services offered through KakaoTalk, will be the foundation of Klaytn's success. However, due to regulatory constraints in Korea, Kakao has not confirmed on plans of integrating Klaytn/Klay into Kakao, and instead, will build an independent platform with third party developers. This is likely to significantly limit Klay's initial adoption and upside potential.

WhatsApp/Facebook

WhatsApp Messenger is the largest instant messenger platform in the world with over 1.5 billion MAUs. In 2014, Facebook acquired WhatsApp at a valuation of \$19bn when WhatsApp had a user base of 600 million. It was reported by Bloomberg that Facebook is planning on launching a stablecoin to be used within WhatsApp for international remittance; but the project is still in the initial planning stage with no clear timeline.

With such a large user base and directly competing with Telegram in various geographic regions, WhatsApp probably poses the most threat to Telegram. However, as a subsidiary within a large corporation like Facebook, decisions and execution will take time, which provides Telegram with a window of opportunity to establish dominant market positions and begin taking market share away from WhatsApp.

Exhibit 10: Global social media platform peer comparison

	MAU (M)	User age group	Main country user (%)	Avg message sent (M per day)	Avg app open (times per day)	m-app time (mins per day)	Payment Systems	MAU (M)
WhatsApp**	1,500	n.a.	India (13%) Brazil (8%)	65,000	n.a.	9.0	Launched a beta testing of P2P payment network in India	n.a.
Facebook Messenger**	1,300	25-34 (31%) 18-24 (27%)	India (15%) U.S (10%)	7,000 (new convers)	n.a.	4.0	Only transfers within the contact list on Facebook Messenger, c14% of P2P users implying c11M people	n.a.
Wechat	1,083	18-25 (45%) 26-35 (41%)	China (90%)	38,000	23	65.5	735	900.0
Snapchat	186	13-20 (37%) 25-34 (25%) 21-24 (19%)	North America (45%)	3,500	25	34.5	Launched Snapcash in 2014 in partnership with Square but was shut down in August 2018	n.a.
LINE	164	NA	Japan (48%) Thailand (27%) Taiwan (13%) Indonesia (12%)	4,200	n.a.	23.0	9.6	40.0
Momo	113	30-39 (45%) 40-49 (38%)	China (c100%)	655	5	17.0	No payment system; fiat used to purchase momo coin for in-app gifts, in-game currency, etc	n.a.
Telegram*	200	18-24 (36%) 25-34 (30%)	Russia (17%) India (15%) Brazil (9%) Indonesia (7%)	8,667	10	n.a.	Bots used to accept payments	n.a.

* instead of the reported 70 billion messages, we used WhatsApp message count**Telegram MAU/WhatsApp MAU

** only including U.S data for in-app time

VII. TRANSACTION OVERVIEW

The transaction contemplated will involve BSG purchasing \$2.0 million token subscription from seller's offshore SPV, which holds future rights of Gram tokens issued by TON through a SAFT agreement. BSG's purchase price will be at per token price of \$0.453 at \$2.265B valuation, representing a 20% premium compared to round 1 token price of \$0.377, and 66% discount to round two's per token price of \$1.33. BSG has secured one of the best pricing and structure on the market. The latest secondary market pricings are in the \$1.00-1.25 range for round 1 token, and \$1.50-1.80 for round 2 token, with 20-30% carry with performance ratchet.

Telegram currently has 175 accredited investors that participated through the private sales. Top institutional and large family offices include [REDACTED]

[REDACTED] and [REDACTED].

- Private round 1: \$850M at \$1.89B through the sale of 2.255 billion GRAMs (45.1% of total token supply) at a per token price of \$0.377
- Private round 2: \$850M at \$6.65B through the sale of 639 million GRAMs (12.8% of the total token supply) at a per token price of \$1.33

For private round 1 tokens, 25% of the tokens will be unlocked every three months after the official launch of the TON Blockchain, which is scheduled for the second quarter of 2019. As for private round 2, there will be no lockup.

In terms exit, BSG team will target for the earliest investment principal repayment, with longer holding of remaining stake for upside optimization. A direct listing on a cryptocurrency exchange is expected to be 6 months after launch of the mainnet, as indicated by TON's management, and discussions are underway with global top exchanges.

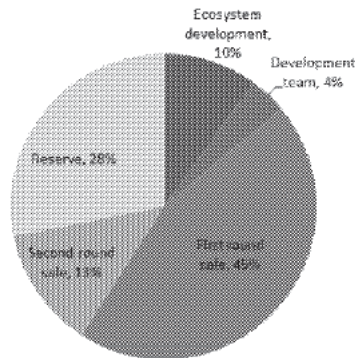
Exhibit 11: Lockup Schedule

3 months after launch	6 months after launch	9 months after launch	12 months after launch
25.0%	25.0%	25.0%	25.0%



A total of 5 billion Grams will be issued initially, with private sales accounting for 57.9%, TON's team accounting for 4%, ecosystem development accounting for 10% and reserves accounting for 28.1%.

Exhibit 12: Token allocation



Viewed as a utility token similar to Ethereum, Grams is likely not to be regulated by the U.S. government given the current regulatory landscape put in place. Furthermore, albeit the U.S. government not regulating private sales, Telegram still voluntarily filed with the SEC in 1Q2018, significantly mitigating regulatory uncertainties.

Since any asset based, bottom-up valuation analysis is challenging, as TON will be fully integrated with Telegram, we believe that comparable valuation metric would be best suited for return calculations. Below is table showing different valuation metrics, please note that Telegram/TON's valuation is calculated based on the proposed BSG purchase price of \$0.453.

Overall, we believe that the TON platform provides a compelling stand-alone investment case. We note that Telegram valuation should reflect the characteristic of its user base with 1) more blockchain and crypto centric active users compared to industry peers, and 2) significantly larger number of bots. Compared to the industry comparable median valuation, Telegram's second round private sales was priced at 49% discount, while BSG's investment cost is priced at 83% discount.

Exhibit 13: Comparable Valuation (prices as of March 16, 2019)



	Market Cap (US\$ M)	2018 MAU (M)	Val/MAU	'18 Revenue (US\$ M)	Rev/MAU	MAU Growth (YoY %)
Listed Social Network Companies						
Facebook	494,796	2,320	213.3	55,838	8.9	9.0%
Tencent/WeChat	434,661	1,083	401.5	46,195	9.4	10.5%
Twitter	23,894	321	74.4	3,043	7.9	(2.7%)
WhatsApp	19,000	600	31.7	NA	NA	NA
Weibo	13,908	462	30.1	1,720	8.1	17.9%
Snapchat	13,276	186	71.4	1,180	11.3	(0.5%)
Line	8,377	164	51.1	1,865	4.5	(2.4%)
Kakao	7,519	50	149.8	2,103	3.6	1.0%
Momo	7,327	113	64.7	1,950	3.8	14.3%
<i>Average</i>			120.9		6.5	4.6%
<i>Median</i>			71.4		6.2	0.2%
Blockchain Projects						
Line - Link	3,280	164	20.0	NA	NA	NA
Kakao - Klaytn	900	50	17.9	NA	NA	NA
<i>Average</i>			62.9			
<i>Median</i>			57.9			
Blended Average						
102.4						
Blended Median						
64.7						
Telegram/TON						
Private sale - Round 1	1,885	200	9.4	NA	NA	59.0%
Private sale - Round 2	6,650	200	33.3	NA	NA	59.0%
BSG	2,265	200	11.3	NA	NA	59.0%

Note:

Snapchat only publishes DAU number

Tencent, MAU as of 3Q2018, 2018 Revenue is Wallstreet est.

Median and average numbers excluding Tencent and Facebook

WhatsApp's valuation during its sale to Facebook

Assuming Klaytn sold 10% of its tokens in the most recent round

Line's MAU numbers only include Japan, Taiwan, Thailand and Indonesia

VIII. RECOMMENDATION

Telegram is the world largest dApp platform with over 200 million MAUs, growing rapidly from a blockchain/crypto centric messaging software, to becoming a globally mainstream adopted network platform supporting messaging, social media, storage, financial services and more, across a decentralized ecosystem.

Positioned through the communication rail, Telegram captures one of the foundational demand layers that is of the highest frequency (in terms of share of time), with deep interactive engagement, and network effects. Messaging as the most prolific form of communication, is the most scalable infrastructure rail, on which diversified contents, products and services can be delivered to massive distributed networks. However, new infrastructure rails with foundational demand, are rare opportunity set given typically the lack of market white space and very high switching cost. Telegram is very timely in capturing a **unique situation where market white space converges with rapidly growing user demands, for crypto native/captive social media network.**

Telegram has a **world class team, with top development and engineering talents and successful track record in building highly scaled social media SaaS platform (i.e. VK) from the ground up, led by driven and inspirational leadership.** The team has aggressively ramped up Telegram in terms of



its functionality, product suite, and is overlaying user generated content (UGC) to capture deep interactions and engagements.

Gram is designed with fully integrated token economics to exclusively capture, incentivize, and optimize value creations across the TON protocol underlaying the Telegram messaging network, and across its social ecosystem. In addition to its foundational messaging platform, multi-layered killer applications including 1) TON enabled built in features: wallet, and ID, 2) existing ecosystem services: crypto exchange, advertising exchange, digital marketplace, and dApp store, and 3) Gram: payment medium, staking tool, and gas/fee, drives Telegram's real economic commercialization and mass proliferation.

We believe Telegram represents a dominant leader in the crypto instant messaging and social media space, with a highly scalable platform to drive and capitalize on digital asset's global mainstream adaptation. We see **core intrinsic value propositions including: 1) game changing dApp distribution platform underpinned by high frequency and engaging communication infrastructures across a captive user base, 2) utility-centric growth engine further levered by content specific network effects, 3) killer application rails across payment (financial service) and identification (gateway) targeting under serviced core demands, and 4) industry best team with proven track record, relevant expertise, deep talents, and visionary leadership.**

Given BSG's relationship with the seller, **we have procured a highly attractive secondary opportunity at \$0.453 per token, representing 66% discount to the last private round valuation.** Assuming targeted exchange listing in 4Q19 at a price at least on par with the previous round (\$1.33 per token), **BSG stands to receive principal within 7-9 months with 66% remaining stake for significant long termed upsides.**

We recommend proceeding with this investment, and to execute and close with immediate effect.

We also recommend, and the partners have agreed, to provide potential co-investment opportunities to selective BSG existing shareholders and potential BSG Series A investors.



APPENDIX A – TON Development Status: Overall progress towards the test version, 90%

1. TON Virtual Machine (TVM)

TON VM or TVM is the component required for executing smart contracts in the TON Blockchain.

✓ *Implementation: 95% complete*

TVM has been fully implemented and internally tested. Minor modifications will likely be necessary during the process of binding TVM with the TON Blockchain block generation and validation software. In addition to TVM itself, a database required for storing on disk and accessing large amounts of TVM data (e.g., smart-contract code and data, old blocks, blockchain state) without loading all of it into memory has been developed.

✓ *Documentation: 95% complete*

The current version of TVM is fully described in Telegram Open Network Virtual Machine (September 5, 2018). Minor modifications to the implementation may require corresponding changes in the documentation.

2. TON Network

The TON Network is the component required for delivering requests (e.g., proposed transactions) and propagating newly-generated TON Blockchain blocks through the network.

✓ *ADNL (low-level overlay network protocol running over IP networks): 80% complete*

All functionality required for the test version is complete, including elliptic curve cryptography and the node lookup protocol. Some sophisticated options and additional cryptographic options that are not required for the launch of the test version will be implemented later (prior to the final launch).

✓ *Overlay networks over ADNL: 100% complete*

Overlay networks are required to build node groups inside the ADNL networks. For instance, the validators for a shardchain create their separate overlay network to propagate new block candidates and run a TON-specific Byzantine Fault Tolerant (BFT) consensus protocol.

✓ *Broadcast protocols for overlay networks over ADNL: 100% complete*

Simple broadcast protocols are used inside overlay networks to propagate small messages, such as the BFT consensus protocol messages, to all members of an overlay network. These protocols are required for the implementation of validator BFT consensus.

✓ *CATCHAIN protocol: 100% complete*

The CATCHAIN protocol is a variant of broadcast protocols tailored for implementing BFT consensus protocols and for solving similar group consensus tasks in a closed membership overlay network. As such, it is the first step in implementing the validator BFT consensus protocol.

✓ *Streaming broadcast protocols: 100% complete*

Streaming broadcast protocols are used to quickly propagate large amounts of data, such as newly-generated TON Blockchain blocks (to all full nodes) and block candidates (to the validators of the corresponding shardchain). Streaming broadcast protocols employed by TON use Forward Error Correction (FEC) protocols as their component.

3. TON Blockchain Block Generation and Validation

The block generation and validation software relies heavily on TVM and the TON Network to create new block candidates, validate them among the validators, and propagate the signed blocks to all full nodes. Since the work on the TVM and TON Network components listed above is largely complete, the TON Blockchain is now in active development.



✓ *Documentation: 90% complete*

The documentation is intended to present a complete description of the masterchain and shardchain block format in the TON Blockchain. The shardchain block description available in Telegram Open Network Blockchain (September 5, 2018), while unchanged in the principal points, will require some minor modifications based on changes that have arisen during the final development phases. Some details of the masterchain blocks, such as the list of all configurable parameters with their respective types, are not fully documented at this time, because they are not completely finalized yet; they will be added to the documentation during the testing phase.

✓ *Block manipulation library: 95% complete*

The block manipulation library is intended to store entire blocks and their parts in files, load these data into memory, and access or modify different data structures present in a block. All methods originally intended have been implemented. Some minor modifications may be required during the final stages of validator software development.

✓ *Validator BFT Consensus protocol: 95% complete*

The TON-specific Byzantine Fault Tolerant (BFT) consensus protocol is used by validators during block generation to reach agreement on the next block of a shardchain or the masterchain (as applicable). This custom BFT protocol, built upon TON CATCHAIN, has been completely implemented and tested, yielding 2–3 second consensus time for a test network of 100 servers distributed around the world. This is consistent with the five second block generation interval proposed in the TON Whitepaper.

✓ *Validator software: 60% complete*

Validator software uses the block manipulation library to generate block candidates, validate block candidates proposed by other validators, and achieve consensus on the next block in a shardchain or the masterchain. It consists of the network component (especially the BFT Consensus protocol) and of the local block generation (collation) and validation component. The network component is almost complete. The local block generation and validation component is currently halfway complete, but most development efforts are currently dedicated to the completion of this component.

✓ *Full node software: 80% complete*

A full node of the TON Blockchain is a program that obtains and stores local copies of all or some blocks, and may re-distribute these blocks to other full nodes if required. It is also an important component of the validator software, because validators are (specialized) full nodes as well. The network component and the local storage component of the full node software are currently in active development and nearing their completion.

✓ *Smart-contract development, test, and debug environment: 50% complete*

A test and debug environment for smart contracts is already implemented and internally tested, along with low-level “TVM assembly” smart-contract language. The compiler from a high-level smart-contract language is 20% complete—its core functionality is ready, but more built-in functions and operations need to be defined.

✓ *Fundamental and sample smart contracts: 20% complete*

Some sample smart contracts are prepared in “TVM assembly”. The implementation of fundamental smart contracts—which reside in the masterchain and run crucial tasks such as electing new validators and changing configurable parameters—requires the availability of the high-level smart-contract compilers and development tools discussed above. However, the launch of a test network with very basic versions of fundamental smart contracts is our top priority. We plan to replace the basic versions of these smart contracts with more sophisticated versions during the testing phase.



***This communication contains forward-looking statements, including statements of plans, objectives, expectations, development status and intentions. Any number of factors could cause actual results to differ materially from those contemplated by any forward-looking statements, including but not limited to the risks identified in Appendix B to the Whitepaper ***

APPENDIX B – WECHAT CASE STUDY

Wechat, launched by the Chinese internet giant Tencent in 2011, has more than 1,082.5 million MAUs by 3Q2018, making it the third biggest instant messenger trailing only behind WhatsApp and Facebook Messenger.

Initially, similar to WhatsApp and many other mobile instant messaging platforms, Wechat first positioned itself as a cost effective alternative to SMS services offered by telcos. In addition, it also offered voice clips and the ability to send pictures. Later on, other services were added such as the ability to create group chats, send videos and files, initiate one to one or group voice and video calls, stickers, and Moments that allow users to post texts, photos, and short videos, and share links and articles, only seen by people that are in the poster's contact list. These features were all focused on one thing, making communication and social interaction more efficient, which is a "staples goods" as communication is one of the most fundamental needs of humans.

In August 2013, after Wechat reaching 200 million users, it introduced the payment function, Wechat wallet, which can be connected to domestic debit/credit cards and initially only used on Wechat sponsored vending machines. But in 2014 during Chinese New Year, Wechat launched what would be one of the most successful adoption campaigns in social platforms history, the Red Packets Campaign. Users were allowed to send Red Packets to a private or group chat in which the receiver can click to receive money from the Red Packets which is stored within their Wechat wallet. The user can withdraw the money by linking their bank accounts, and 5 million users did so within the first day. Through mass adoption of its wallet, Wechat then strategically expanded its payment network to both offline and online commerce, making it the largest mobile payment gateway by both MAU and DAU by 2018. As a testament to its and Alipay's success, rarely do you need to use cash now as long as you have your phone with you. Other services such as wealth management, micro financing and insurance were also later introduced.

In an effort to continue increase its utility, Wechat also launched an iOS App store like feature called the Mini Program, allowing third party developers to deploy mobile applications within Wechat, further lifting the ceiling on Wechat's gateway capability. Then came ecommerce, Wechat Business, and many other utility driven products; truly transforming it to a super-app of China, where a person can satisfy all his/her personal needs within the app. Wechat has become the "super app" of China, and a model for global competitors to base their growth strategy.